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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/599,828	10/11/2006	Mikhail Yurievich Kudryavtsev	V-347	5228
802	7590	04/13/2009	EXAMINER	
PATENTTM.US P. O. BOX 82788 PORTLAND, OR 97282-0788			MONDT, JOHANNES P	
ART UNIT	PAPER NUMBER			
	3663			
MAIL DATE	DELIVERY MODE			
04/13/2009	PAPER			

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/599,828	<b>Applicant(s)</b> KUDRYAVTSEV, MIKHAIL YURIEVICH
	<b>Examiner</b> JOHANNES P. MONDT	<b>Art Unit</b> 3663

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If no period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 10/11/06 (filing).  
 2a) This action is FINAL.      2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1-8 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 1-8 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) Notice of References Cited (PTO-892)  
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)  
 3) Information Disclosure Statement(s) (PTO/SB/08)  
 Paper No(s)/Mail Date \_\_\_\_\_

4) Interview Summary (PTO-413)  
 Paper No(s)/Mail Date \_\_\_\_\_  
 5) Notice of Informal Patent Application  
 6) Other: \_\_\_\_\_

### **DETAILED ACTION**

1. The filing of the national stage of the application forms the basis for this Office action. A preliminary amendment filed on the filed date of the national stage (10/11/06) is acknowledged.

#### ***Claim Objections***

2. **Claims 2-4** are objected to because of the following informalities: "A system according to Claim 1" should be replaced by "The system according to Claim 1". Appropriate correction is required.

3. **Claims 6-8** are objected to because of the following informalities: "A two-position switch according to Claim 5" should be replaced by "The two-position switch according to Claim 5". Appropriate correction is required.

#### ***Specification***

4. The abstract of the specification is objected to because it is too long (150 words is the maximally allowed number of words). Correction is required. See 37 C.F.R. 1.72(b).

#### ***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:  
  
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.  
  
6. Regarding **claims 1-4**, the term "shell-type" in the phrase "shell-type nuclear reactor", as introduced in claim 1, lines 1-2, is not accompanied by an explicit definition in the specification and is far from a term widely used in the art, as a consequence of

which said phrase renders the claim indefinite, because it is unclear what exactly the metes and bounds of the claimed invention are.

7.     **Claims 1-4**, through claim 1, line 8, recite the limitation "the reactor shell". There is insufficient antecedent basis for this limitation in the claim.

8.     **Claims 1-4**, through claim 1, recite the limitation "the element engaging the operating device with the said fixed element" in lines 23-24. There is insufficient antecedent basis for this limitation in the claim. In particular "the element" cannot possibly be construed to be the "fixed element" (7) precisely because of said limitation, while no "element" per se has been recited in the part of claim 1 preceding said limitation.

9.     **Claims 1-4**, through claim 1, line 26, recite the limitation "the control element". There is insufficient antecedent basis for this limitation in the claim.

10.    **Claims 1-4**, through claim 1, recite the limitation "one of the parameters defining the safe operation limits for the reactor" in lines 28-29. There is insufficient antecedent basis for this limitation in the claim because "the parameters" lack any antecedent basis, while "the parameters" defining safe operation are not inherently defined.

11.    Regarding **claims 1-4**, the phrase "e.g.", meaning "for example", in claim 1, lines 28-29 and, independently again in lines 32 and 38, render the claims indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

12.    **Claims 1-4** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which

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applicant regards as the invention. The disclosed "operating devices" (7) are recited in claim 1, line 3. An additional introduction of "operating devices" in line 34 causes the metes and bounds of operating devices thereby introduced to be vague and ill-defined, thus rendering the claims indefinite.

13. ***Claims 1-4***, through claim 1, line 40, recite the limitation "the shell connector".

There is insufficient antecedent basis for this limitation in the claim.

14. ***Claims 1-4*** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. According to pre-amble and positively recited structural components, the claims are drawn to a control system. Yet, requirements on the two-position switch are formulated in terms of nuclear reactor components and their properties, as a result of which it is not clear whether the claims are drawn to the sub-combination of control system or, alternatively, to a combination of control system within or attached to a nuclear reactor with definite properties impacting on the control system, such as the reactor shell, operating devices and reactor shell connector. Therefore, the metes and bounds of the claimed invention are vague and ill-defined, rendering the claims indefinite.

15. The term "small" in ***claim 2***, line 7, is a relative term which renders the claim indefinite. The term "small" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

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16. **Claim 3** is additionally rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In particular, the metes and bounds of the further limitation as defined by claim 3 are vague and ill-defined because two radically different interpretations are possible of "only", namely: (1) as adverb limiting "moved" (line 3), or (2) as adverb limitation "after", whereby the claim is rendered additionally indefinite.

17. **Claims 5-8**, through claim 5, recite the limitation "the switch control element" (line 2 of claim 5). There is insufficient antecedent basis for this limitation in the claim.

18. **Claims 5-8**, through claim 5, recite the limitation "the parameters" (line 3 of claim 5). There is insufficient antecedent basis for this limitation in the claim.

19. **Claims 5-8**, through claim 5, recite the limitation "the reactor safe operation limits" (lines 3-4 of claim 5). There is insufficient antecedent basis for this limitation in the claim.

20. **Claims 5-8** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In particular, the verb "acting" placed within brackets renders the metes and bounds of the claimed invention vague and indefinite because it is not clear whether the verb is part of the claim language, and also because the meaning within context of the verb is entirely unclear.

21. **Claims 5-8** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which

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applicant regards as the invention. The independent claim recited "if the following parameters reach their critical values", followed by a listing of three parameters linked by "and/or". However, in the even "or" is selected twice there is no plurality of the recited parameters, despite the exclusive use of the plural form, i.e., of "parameters", in the claim language, while if the first "and/or" is selected to be "or", then a selection of "and" for the second "and/or" would be poly-interpretable: in symbolic logic notation, "A or B and C" is indefinite, because it may mean A or (B and C), but it may also mean "(A or B) and C". Therefore, the metes and bounds of the claimed invention are vague and ill-defined, whereby the claims are rendered indefinite.

22. **Claims 5-8** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. According to pre-amble and positively recited structural components, the claims are drawn to a two-position switch. Yet, requirements on the two-position switch appear to depend on properties of nuclear reactor components not positively recited, as a result of which it is not clear whether the claims are drawn to the sub-combination of two-position switch or, alternatively, to a combination of two-position switch within or attached to a nuclear reactor with definite properties impacting on the two-position switch, such as the existence and specific nature of critical parameters and single-valued critical values and the existence of fuel rods. Therefore, the metes and bounds of the claimed invention are vague and ill-defined, rendering the claims indefinite.

23. **Claim 6** is additionally rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The introduction of "a two-position switch" in a limitation on line 2 causes the metes and bounds of the claimed invention to be vague and ill-defined in the presence of an already recited "two-position switch" in the absence of clarity whether one and the same or another two-position switch is recited by said limitation, whereby the claim is rendered indefinite.

24. **Claim 7** is additionally rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The introduction of "a two-position switch" in a limitation on line 2 causes the metes and bounds of the claimed invention to be vague and ill-defined in the presence of an already recited "two-position switch" in the absence of clarity whether one and the same or another two-position switch is recited by said limitation, whereby the claim is rendered indefinite.

***Claim Rejections - 35 USC § 103***

25. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

26. **Claims 5 and 7-8** are rejected under 35 U.S.C. 102(b) as anticipated by Klapper (DE 2412228 A), relying on English abstract only. N.B. : the rejection is offered subject

to the noted indefiniteness under 35 U.S.C. 112, 2<sup>nd</sup> paragraph, see sections 16-24 above, to the best of examiner's understanding.

*Klapper* teaches a two-position switch ('simple switch') having two fixed states depending on a position of the switch control element relative to a critical position corresponding to a critical value reached by a thermal expansion due to reaching a critical temperature (see English abstract). Referring to the above rejection under 35 U.S.C. 112, 2<sup>nd</sup> paragraph, the only positively recited elements of the two-position switch pertain to the two-position switch and its responsiveness to critical values of specific physical quantities, and in particular the nuclear reactor features only appear in limitations of intended use, i.e., "for passive protection of a nuclear reactor", only requiring the two-position switch to be sensitive to a critical value of a parameter of relevance to the intended use for passive protection as listed in the final three (3) lines of the claim. Any simple switch has at least two positions. Hence the simple switch by *Klapper* is a two -position switch. Moreover, said two-position switch is capable of performing the intended use because said switch transits from open to closed upon measuring thermal expansion due to reaching a critical temperature and hence is capable of performing the intended use specifically with regard to the thermally dependent density of reactor coolant.

Applicant is reminded that in reference to intended use and other types of functional language must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the

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claim. In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963).

*On claims 7-8: the further limitations so defined fails to limit the two-position switch but instead only limits its intended use by connecting said two-position switch to a float (claim 7) or to an element arranged in reactor coolant (claim 8). Neither the float nor the element in reactor coolant have been positively recited as structural component of the two-position switch.*

Applicant is reminded that in reference to intended use and other types of functional language must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963).

27. **Claim 6** is rejected under 35 U.S.C. 102(b) as anticipated by Jang et al (US 6,229,121 B1) , relying on Stoll et al (4,514,364) for establishment of fact. N.B.: the rejection is offered subject to the noted indefiniteness under 35 U.S.C. 112, 2nd paragraph, see sections 17-24 above, and is made to the best of examiners' understanding. The rejection pertains to the sub-combination of the two-position switch per se.

*Jang et al teach as conventional (see col. 1, "Background of the Invention") a two-position switch based on bi-metal, with metals of different coefficient of thermal*

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expansion, such that due to thermal expansion the two metals may "depart or embrace" each other and thereby either drive or cut off a circuit.

Since, as witnessed by Stoll et al (col. 1, "Background of the Invention"), fuel element and fuel rod cladding embodiments are known in which both the fuel material and the cladding are metallic but of different metals, the two-position switch by Jang et al meets the requirement of being capable to perform the intended use, where for brevity examiner refers to the explanation in the rejection of claim 5, as there is not evidence at all that applicability to all types of reactors is claimed.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOHANNES P. MONDT whose telephone number is (571)272-1919. The examiner can normally be reached on 7:30 - 17:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack W. Keith can be reached on 571-272-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Johannes P Mondt/  
Primary Examiner, Art Unit 3663